

**REMARKS**

Claims 1-7 and 9-13 are pending in this application. Claim 1 has been amended to recite the subject matter of canceled claim 8. No new matter has been added by way of the above-amendment.

***Claim Objections***

Claim 12 is objected to for containing a word processing error. In response, Applicants have amended claim 12 to correct the term "□m". Withdrawal of the objection is respectfully requested.

***Claim Rejections - 35 USC §§ 102 and 103***

The following prior art based rejections are pending:

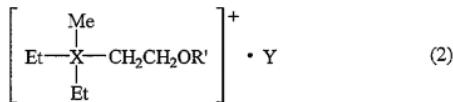
- (A) Claims 1, 2, and 5-11 are rejected under 35 U.S.C. 102(a) as being anticipated by WO 02/076924. Sato (U.S. Patent 7,297,289) is taken as an English language equivalent herein;
- (B) Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over McEwen et al. (U.S. Pre-Grant Publication No. 2002/0110739) in view of Matsumoto et al. (*Electrochemical Society Proceedings*, 2000); and
- (C) Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over McEwen et al. in view of Matsumoto et al. as applied to claims 1-12 above, and further in view of Takekawa et al. (U.S. Pre-Grant Publication No. 2002/0081485).

Applicants respectfully traverse the rejections.

With respect to Sato, Applicants respectfully submit that Sato is not prior art to the present invention. Sato is available under 35 USC 102(a) as of its publication date of October 3, 2002. Applicants enclose herewith a verified English translation of the instant priority document Application No. 2002-248004 which was filed in Japan on August 28, 2002. Applicants respectfully submit that the presently claimed invention has sufficient written description support in Application No. 2002-248004 and the presently claimed invention is enabled by the disclosure

of Application No. 2002-248004. As such, the present invention has a date prior to the date of Sato and as such, Sato is not prior art to the present invention and the rejection is moot.

With respect to McEwen et al., Matsumoto et al. and Takekawa et al., Applicants have amended the claims to further distinguish therefrom. Specifically, Applicants have amended claim 1 to recite that the nonaqueous electrolyte contains an ionic liquid having general formula (2) below and a melting point not higher than 50°C



wherein R' is methyl or ethyl.

Applicants respectfully submit that the ionic liquid of inventive general formula (2) is distinct from the quaternary ammonium cation described in McEwen et al., since the quaternary ammonium cation described in McEwen et al. does not have alkoxyalkyl group(s).

With respect to Matsumoto et al., Matsumoto et al. disclose a molten salt being a quaternary ammonium salt having a methoxymethyl group. However, they fail to disclose a quaternary ammonium salt having one methyl group, two ethyl groups and one (m)ethoxyethyl group. In addition, Matsumoto et al. fail to teach that a salt having R' OCH<sub>2</sub>CH<sub>2</sub>X' Et<sub>2</sub>Me cation goes into a liquid state.

Furthermore, the artisan would *not be able to predict* the effect of modifying the length of the alkyl chains on the ionic liquid salt of Matsumoto et al. to give the ionic liquid of inventive general formula (2). Even though the courts have adopted a more flexible teaching, suggestion, motivation (TSM) test in connection with the obviousness standard based on the *KSR v. Teleflex* case, which case involved a mechanical device in a relatively predictable technological area, it remains true that, despite this altered standard, the courts recognize inventors face additional barriers in relatively unpredictable technological areas as noted in *Takeda Chemical Industries, Ltd. v. Alphapharm Pty., Ltd.*, 83 USPQ2d 1169 (Fed. Cir. 2007). Applicants respectfully submit

that increasing and decreasing of one carbon atom in a cation exercises considerable influence on a state of a salt having the cation, and the melting points of salts based on the cation forms could not be predicted.

As evidence of this fact, the attached document A (Hirao et al.) discloses the following matter:

"The characteristics of room-temperature molten salts are known empirically to depend strongly on the position and length of hydrocarbon constituents. Some asymmetric onium salts have a melting point below room temperature. However, the obvious correlation between cation structure and the capacity to form a room-temperature ionic liquid has never yet been reviewed." (Lines 22-27, column 1, page 4168, and emphasis added.)

Furthermore, the attached document B (Alan et al.) discloses the following matter.

"There is currently no method available to predict the melting points . . . of the approximately  $10^{18}$  combinations of ions that could lead to useful ionic liquids." (Lines 6-9, column 2, page 225, and emphasis added.)

Those skilled in the art therefore could not foresee that the salt having  $\text{R}'\text{OCH}_2\text{CH}_2\text{X}^+\text{Et}_2\text{Me}$  cation shows a liquid state on the basis of the disclosure of Matsumoto et al. Furthermore, those skilled in the art could not foresee the ionic liquid of inventive general formula (2) and the advantageous effect thereof from the disclosure of McEwen et al. and Matsumoto et al.

In addition, the Examiner relies upon Takekawa et al. for teaching the subject matter of inventive claim 13. In view of the fact that Takekawa et al. do not teach or fairly suggest the ionic liquid of inventive general formula (2), Takekawa et al. fail to cure the deficiencies of McEwen et al. and Matsumoto et al.

In view of the significant patentable distinctions between the present invention and the teachings of McEwen et al., Matsumoto et al. and Takekawa et al., withdrawal of the rejections is respectfully requested.

**Double Patenting**

The following (provisional) rejections based on nonstatutory obviousness-type double patenting are pending:

- (1) Claims 1-11 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-12 of U.S. Patent No. 7,297,289;
- (2) Claims 1-11 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-17 of U.S. Patent No. 7,154,737;
- (3) Claims 1-11 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-15 of U.S. Patent No. 7,347,954;
- (4) Claims 1-11 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-7 of U.S. Patent No. 7,167,353; and
- (5) Claims 1-11 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-20 of U.S. Serial No. 11/537,269.

In response, Applicants enclose herewith Terminal Disclaimer(s). As such, these (provisional) rejections are rendered moot.

In legal principle, the filing of Terminal Disclaimer(s) simply serves the statutory function of removing the rejection of obviousness-type double patenting, and does not raise a presumption on the merits of the rejection. It is improper to view the simple expedient of "obviation" as an admission or acquiescence on the merits. *Ortho Pharmaceutical Corp. v. Smith*, 22 USPQ2d 1119, 1124 (Fed. Cir. 1992) citing *Quad Envil. Technologies Corp. v. Union Sanitary Dist.*, 946 F.2d 870, 874, 20 USPQ2d 1392, 1394-95 (Fed. Cir. 1991).

Conclusion

Entry of the above amendments is earnestly solicited. An early and favorable first action on the merits is earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Gerald M. Murphy, Jr. (Reg. No. 28,977) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

Dated: October 6, 2008

Respectfully submitted,

By   
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Attached:

- (A) Verified English translation of the instant priority document Application No. 2002-248004,
- (B) Hirao et al., *Journal of the Electrochemical Society*, 147 (11), pages 4168-4172 (2000),
- (C) Katritzky et al., *J. Chem. Inf. Comput. Sci.*, 42, pages 225-231 (2002),
- (D) Terminal Disclaimer over 7,297,289; 7,154,737; 7,347,954; and 7,167,353, and
- (E) Terminal Disclaimer over Application Serial No. 11/537,269.